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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to the recorder carrying an optical reader.

[0002]

[Description of the Prior Art]In recorders, such as a facsimile machine which possesses optical reading functions, such as a line scanner, conventionally, It has independently a paper conveying path at the time of the recording operation of the picture information to a transfer material, and the reading operation of a manuscript, and many things possessing the means in the time of recording operation and reading operation by which a paper carrying means is also still more separate are provided.

[0003]Although what performs reading operation and recording operation using the same paper carrying means was provided, as for these, it was almost the case that it is a read station of the serial type which exchanges a recording head for a read head and performs it, for example.

[0004]

[Problem(s) to be Solved by the Invention]However, in the recorder which has independently a paper conveying path at the time of reading operation and recording operation in the above-mentioned conventional example, for example, Those part mark may increase compared with conveyance by a single course, it may have become a cause of enlargement of a cost hike and a device, and this tendency is in the recorder which carries a line scanner unit especially. [0005]Although there is also a device which exchanges the head for record and the serial type scanner for reading, and changes recording operation and reading operation in the recorder using the same paper conveying path, It read compared with the line scanner, speed was inferior, and it had a technical problem in the user-friendliness also in the operativity of exchanging heads.

[0006]The purpose of the invention concerning this application stops part mark, compactly, moreover, is cheap and tends to provide the recorder provided with the reading function and the recording function.

[0007]

[Means for Solving the Problem]In this invention in order to solve the above-mentioned problem, It holds in the state where a line scanner unit was made to shunt in reciprocation moving of a recording head and a carriage, and a position in which it does not interfere at the time of recording operation, and a recording medium is conveyed by a transportation means, and while a recording head carries out reciprocation moving of this recording-medium top, printing operation is performed selectively.

[0008]A shunting position (home position) is made to stop said carriage and a recording head at the time of reading operation, Move said line scanner unit to a reading station in said recording head movable space whose shunting position of said carriage is a position in which it does not interfere, a reading medium is made to convey by same paper transit route and a paper carrying means as recording operation, and it is characterized by performing reading operation.

[0009]By thus, a thing for which reading operation and recording operation are performed by the same paper carrying means within the same paper path course, movement of a line scanner unit moreover performs a change of reading operation and recording operation, and recording head movable space is used effectively. It becomes possible to press down part mark, to be cheap and to provide compactly, a device of a reading function and recording-function one moreover.

[0010]

[Embodiment of the Invention](A 1st embodiment) The recorder of optical reader loading concerning a 1st embodiment is explained with reference to drawings. The left sectional view of the recorder, drawing 6, and drawing 7 of the top view of the recorder of reader loading which requires drawing 1 for this embodiment, and drawing 2 are the explanatory views of operation as for which the right side view of the recorder and drawing 3 expressed the right sectional view of the recorder, drawing 4 expressed the left side view of the recorder, and drawing 5 expressed the basic motion of this embodiment.

[0011]In this embodiment, as an example of a recorder, the serial type ink-jet recording device is illustrated, and the recording head of a removable disposable type is used as a recording head used for this recorder.

[0012]First, the outline composition of a recorder is explained with reference to drawing 1 thru/or drawing 5.

[0013]In drawing 1, 1 is a frame of a device main frame and the frame walls 1a and 1b are formed in both sides. 2 is a carriage and carries the recording head 2a as a recording device.

Press fit immobilization of a part of belt 4 is carried out at belt engagement part 2b of this carriage 2. The carriage 2 is attached to the carriage shaft 3 rotatable, and this carriage shaft 3 was supported by the frame walls 1a and 1b mentioned above, and has shown the reciprocation moving to the drawing 1 Nakaya seal P and the direction of Q of the carriage 2 to it.

[0014]5 is CR belt pulley, it is pressed fit in the motor shaft of CR motor 7, and the idle pulley 6 is attached to the device right-hand side in a figure pivotable.

[0015]Said belt 4 is laid [ firmly ] between said CR belt pulley 5 and the idle pulley 6, it rotates by rotation of the CR belt pulley 5, and this belt 4 moves the carriage 2 in the drawing 1 Nakaya seal P and the direction of Q.

[0016]8 is PF motor, it is attached to the frame wall 1a in drawing 1, and the motor gear 8a is pressed fit in the motor shaft.

[0017]16 is a feed roller, and press fit immobilization is carried out at the feed roller axis 16a, and it conveys recording media, such as a recording form, to a recording position. Press fit immobilization of the feed gear 12 is carried out in the right end section of this feed roller axis 16a, and it rotates to the feed roller axis 16a and the feed roller 16, and one. Near the both ends of the feed roller axis 16a is supported by the frame walls 1a and 1b pivotable, respectively.

[0018]Into drawing 1 and drawing 3, 17 is a feed pinch roller and is attached pivotable at the feed pinch roller receptacle 18, It is energized by the feed roller 16 by proper spring force with the spring 18a, and it follows by rotation of the feed roller 16, and rotates, and the feed pinch roller 17 carries out \*\*\*\* conveyance of the recording medium.

[0019]13 is a feed roller, and press fit immobilization is carried out at the feed roller axis 13a, and it has the work which conveys a recording medium. Press fit immobilization of the feeding gear 10 is carried out in the right end section of this feed roller axis 13a, and it rotates to the feed roller axis 13a and the feed roller 13, and one. Near the both ends of the feed roller axis 13a is supported by the frame walls 1a and 1b pivotable, respectively.

[0020]Into drawing 1 and drawing 3, 14 is a delivery pinch roller and is attached pivotable at the delivery pinch roller receptacle 15, It is energized by the feed roller 13 by proper spring force with the spring 15a, and it follows by rotation of the feed roller 13, and rotates, and the delivery pinch roller 14 carries out \*\*\*\* conveyance of the recording medium.

[0021]In drawing 1 and drawing 2, 11 is a feed intermediate gear, and 9 is a delivery intermediate gear, gear with the motor gear 8a, and the feed intermediate gear 11 The feed gear 12, The delivery intermediate gear 9 meshes with the feeding gear 10, respectively, and rotation of the PF motor 8 is transmitted to the feed roller 16 and the feed roller 13 via each gear.

[0022]Here, operation of the drive system of this recorder is explained.

[0023]CR motor 7 is a motor for making the carriage 2 drive, and in this embodiment, the pulse motor is used for it and it has composition rotated with the pulse signal from a drive circuit (un-illustrating).

[0024]When this CR motor 7 does right and reverse rotation of, it has composition in which the carriage 2 carries out reciprocation moving in the drawing 1 Nakaya seal P and the direction of Q via the CR belt pulley 5 and the belt 4. In drawing 1 and drawing 2, the PF motor 8 is a motor for making the feed roller and feed roller which convey a recording medium drive, uses the pulse motor like the CR motor mentioned above, and has composition rotated with the pulse signal from a drive circuit (un-illustrating).

[0025]If this PF motor 8 rotates to the clockwise rotation in drawing 2, the feed roller 16 and the feed roller 13 will rotate to the clockwise rotation in drawing 2 via each gear.

[0026]A recording medium is conveyed in the drawing 1 metacarpus front (down) by rotation of these two rollers 16 and 13.

[0027]The recording head 2a carried in the carriage 2 as a recording device carries out record formation of the image at the recording medium conveyed by the transportation means which comprises the rollers 13 and 14.

[0028]As a recording device in this device, the ink jet recording method which breathes out and records ink from the recording head 2a is used. The flexible substrate (un-illustrating) is attached to the carriage 2, and a picture signal and electric power are supplied to the recording head 2a.

[0029]In drawing 1, although the carriage 2 has stopped near the left edge part of a recorder, this position turns into a position in readiness (home position) of a carriage in case a recording head does not perform recording operation, and turns into a position which performs restoring operation (un-illustrating), such as capping.

[0030]Next, the picture or document read station in this embodiment is explained.

[0031]In drawing 1, drawing 3, drawing 4, and drawing 5, 19 is a line scanner unit and is attached to the left supporting spindle 22 and the right supporting spindle 23 which are formed in crank lever shape pivotable. Said right-and-left supporting spindles 22 and 23 are attached to the frame walls 1a and 1b pivotable, respectively.

[0032]In this embodiment, the above-mentioned line scanner unit 19 is a contact type image sensor, and comprises an image sensor sequence, a rod lens array, an LED array, etc. which were put in order by line form.

[0033]By carrying out press fit immobilization of the control lever 21, and making the left end of the left supporting spindle 22 rotate the lever part 21a, The line scanner unit 19 is selectively fixed to the reading station stuck and read to the member which had the conveyance face L top shown in drawing 5 conveyed to be read, and the noninterfering position which is distant from said conveyance face L shown in drawing 3.

[0034]In drawing 1, since it is located inside (right-hand side) to the cross direction of the position in readiness which the carriage 2 mentioned above, even if the line scanner unit 19 moves to the reading station shown in drawing 5, the carriage 2 and the line scanner unit 19 do not interfere in the line scanner unit 19.

[0035]Since the line scanner unit 19 is located in the noninterfering position of drawing 3 when performing recording operation mentioned above, even when the carriage 2 carries out reciprocation operation in the drawing 1 Nakaya seal P and the direction of Q for recording operation, it does not interfere in the line scanner unit 19 and the carriage 2.

[0036]At this time, the lever 25a of the pilot switch 25 in drawing 3 will be pushed up by a part of line scanner unit 19, it will be in an ON state, and an unillustrated control circuit detects that the line scanner unit 19 is in a shunting state.

[0037]It is, making an arrow direction (clockwise direction) rotate the lever part 21a in drawing 4 from the state mentioned above on the other hand, when carrying out reading operation, As mentioned above, the control lever 21 and the left supporting spindle 22 attached to one also rotate, and the line scanner unit 19 supported by the right-and-left supporting spindles 22 and 23 pivotable is descended and fixed to the prescribed position (reading station) in the recording head movable space shown in drawing 5. The white unit 20 which is a paper presser-foot member for this operation being interlocked with and sticking the paper which is a member to be read to a sensor face at the time of reading operation goes up, and it is held at the position in contact with the line scanner unit 19 (or abbreviated contact).

[0038]At this time, contact with the lever 25a of the above-mentioned position detecting switch 25 and the line scanner unit 19 will separate, and it will be in an OFF state. The control circuit this [ whose ] is not illustrated detects and it is judged that it became reading mode.

[0039]White Mylar 20a used as the white reference of an image sensor is attached to the upper part of said white unit 20.

[0040]At the time of reading operation, the paper which is a member to be read is conveyed by the feed roller 16 and the feed roller 13 which were mentioned above, and reading operation is performed by passing through between the line scanner units 19 and white Mylars 20a which were mentioned above.

[0041]As mentioned above, the transit route and transportation means of a paper at the time of the recording operation mentioned above and reading operation are the same, . [ whether change into the state where the line scanner unit 19 was raised (drawing 3), convey a paper, the carriage 2 is made to go back and forth, and recording operation is performed, and ] It is changed whether in the state where the position in readiness of drawing 1 was made to suspend the carriage 2, the position of drawing 5 is dropped, the line scanner unit 19 is held, a paper is conveyed, and reading operation is performed.

[0042]The control lever 21 which mentioned this change of operation above performs.

[0043]Here, drawing 6 and drawing 7 explain operation of the line scanner unit 19 and the white unit 20 which were mentioned above.

[0044]The cam projection 21c is formed in a part of control lever 21 mentioned above, and it is made to rotate in drawing 6 to compensate for rotation of the lever 21. The end of the white unit operation member (lever) 24 is attached to some white units 20, and an end (left edge part) is already located near [ which was mentioned above ] the projection 21c. The white unit 20 is connected with the 1st lever member 24c via the connecting pin 24b, this 1st lever member 24c is being fixed to 24 d of the 2nd connection lever members, and the approximately L type-like white unit operation member 24 is formed of both the connection lever member. The pivot 24a is formed in a both lever members [ 24c and 24d ] connecting part, and the white unit operation member 24 is rotatable focusing on this pivot 24a.

[0045]Although the state of drawing 6 is in a recording operation state, By rotating the control lever 21 clockwise from this state, this operation is interlocked with, the height 21c of the control lever 21 depresses 24 d of the 2nd lever member of the above-mentioned white unit operation member 24, it rotates focusing on the pivot 24a, and the white unit operation member 24 raises the white unit 20. Since the white unit 20 is attached to the 1st lever member 24c with the connecting pin 24b in that case, enabling free rocking, as for the white unit 20, the horizontal state is held.

[0046]On the other hand, rotation of said control lever 21 is interlocked with, the line sensor unit 19 descends caudad conversely, and white Mylar 20a attached to the reading section (undersurface) of the line sensor unit 19 and the upper surface of the white unit 20 as eventually shown in drawing 7 is fixed by contact or an abbreviated contact state. This state will be in a reading operation state.

[0047](A 2nd embodiment) In a 1st above-mentioned embodiment, although the moving operation of the line scanner unit 19 was interlocked with and moving operation also of the white unit 20 which is a paper receptacle member was carried out simultaneously, it may fix or attach and the white unit may not be.

[0048](A 3rd embodiment) In a 1st above-mentioned embodiment, although movement of the line scanner unit 19 was made to perform by manual operation by a lever, moving operation of a line sensor unit may be performed using the power of CF motor or PF motor.

[0049]

[Effect of the Invention]Since reading operation and recording operation can be performed within the transit route of the same paper according to this invention as explained above, By it not being necessary to also read a paper carrying means and to prepare for business and record independently, and movement of reading means, such as a line scanner unit, performing the change of reading operation and recording operation moreover, and using recording head movable space effectively. It becomes possible to press down part mark, to be

cheap and to provide compactly, the device of a reading function and recording-function one moreover.

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[Translation done.]